Saudi Electronic University

Final Examination (Alternative)	Fundamentals of Mathematics
Date: 25.05.2014	**MATH 001**

Student Name (ARABIC):
Student ID:
Instructor Name:
CRN :

Instructions:

This exam duration is **2 hours.**
This is NOT an open book exam.
The use of calculators is permitted.
The use of mobile phones is NOT permitted.
Please answer all the **5** questions.
The number of pages is **8 pages** including this page.

Marking Scheme:

	Question	Score	
1	(30 Marks)		
2	(4 Marks)		
3	(6 Marks)		
4	(6 Marks)		
5	(4 Marks)		**Signature**
	TOTAL		

Question 1: (30 points)

Choose the correct answer, write your answer in the table below:

1. The degree of the polynomial $8x^4 + 3x^3 + 16x^6 - 4$ is:
   a) 16
   b) 6
   c) 13
   d) 8

2. " Twice a number increased by five " is translated to:
   a) $2x + 5$
   b) $2x^5$
   c) $x + 10$
   d) $2x - 5$

3. The **x − intercept** for the line $3x + 6y = 12$ is:
   a) $(12, 0)$
   b) $(4, 0)$
   c) $(0, 2)$
   d) $(3, 6)$

4. The simplification of $(2a^3b^2)^3$ is:
   a) $8a^6b^5$
   b) $6a^9b^6$
   c) $8a^9b^6$
   d) $2a^6b^5$

5. The equation of the line whose slope is **4** and containing the point $(-2, -3)$ is:
   a) $y = -4x - 5$
   b) $y = -4x + 5$
   c) $y = 4x - 5$
   d) $y = 4x + 5$

6. The solution set for the equation $|x| = -5$ is :
   a) $\{5\}$
   b) $\{-5\}$
   c) ϕ
   d) $\{5, -5\}$

7. The first coordinate is always negative in quadrants:
   a) I and II
   b) II and III
   c) I and IV
   d) III and IV

8. The simplification of $27^{\frac{2}{3}}$ is:
   a) 3
   b) 12
   c) 9
   d) 27

9. The set of numbers for which the rational expression $\dfrac{(x-1)(x-3)}{(x-2)(x-5)}$ is <u>not defined</u> is:
   a) $\{2, 5\}$
   b) $\{-2, -5\}$
   c) $\{1, 3\}$
   d) $\{-1, -3\}$

10. The result of $\sqrt{-200}$ is **:**

    a) $10\sqrt{2}$ b) $-10\sqrt{2}$ c) $-10\sqrt{2}i$ d) $10\sqrt{2}i$

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11. The factorization of $a^2 - 81$ is:

    a) $(a-9)(a+9)$ b) $a(a-81)$ c) $(a+81)(a-81)$ d) $(a-9)(a-9)$

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12. The Greatest Common Factor (GCF) of $12x^6$ and $20x^2$ is:

    a) $240x^8$ b) $2x$ c) $4x^2$ d) $60x^6$

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13. The domain of the function $f(x) = \dfrac{|x-2|}{\sqrt{x+5}}$ is:

    a) $\{x \mid x$ is a real number and $x > -5\}$ b) $\{x \mid x$ is a real number and $x \neq 2\}$

    c) $\{x \mid x$ is a real number and $x \geq -5\}$ d) $\{x \mid x$ is a real number and $x \neq -5\}$

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14. The interval notation for the set $\{x \mid -3 < x \leq 6\}$ is:

    a) $(-3,6)$ b) $[-3,6)$ c) $[-3,6]$ d) $(-3,6]$

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15. The result of the division $\dfrac{8x^6 - 2x^3}{2x^2}$ is:

    a) $4x^3 - x^2$ b) $4x^4 - 2x$ c) $4x^4 - x$ d) $8x^4 - 2x$

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16. The result of the multiplication $(2x+1)(3x+2)$ is:

    a) $6x^2 + 5x + 2$ b) $6x^2 + 7x + 2$ c) $6x^2 + 5x + 3$ d) $5x^2 + 5x + 3$

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17. If $f(x) = \sqrt{5-2x}$, then $f(x) = \sqrt{-2}$ is equal to:
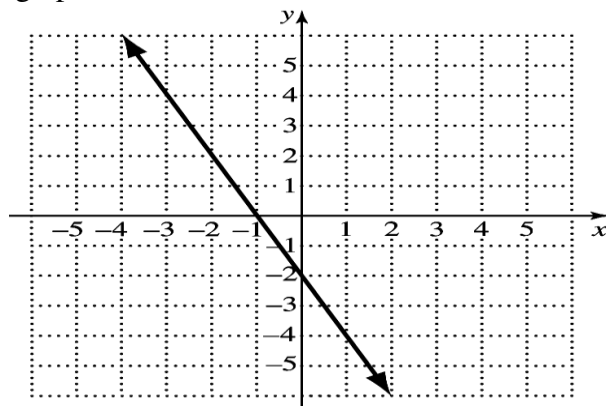
    a) 1 b) -1 c) -3 d) 3

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18. The set $\{......,-4,-3,-2,-1,0,1,2,3,4,........\}$ is called the set of :

   a)   Integers   b)   Whole numbers   c)   Natural numbers   d)   Rational numbers

19. The simplification of $-\left|-\dfrac{2}{3}\right|$ is:

a) $\dfrac{2}{3}$ b) $-\dfrac{2}{3}$ c) $\dfrac{3}{2}$ d) $-\dfrac{3}{2}$

20. The equation illustrated by this graph is:

a) $x+2y=-2$ b) $-x+2y=2$ c) $2x+y=-2$ d) $x-2y=2$

Question	1	2	3	4	5	6	7	8	9	10
Answer										
Question	11	12	13	14	15	16	17	18	19	20
Answer										

Question 2: (4 points)

Perform and simplify the following:

1. $\dfrac{1}{2x-1} + \dfrac{3}{(2x-1)(x+1)} + \dfrac{1}{x+1}$

2. $\dfrac{2x-6}{(x+1)^2} \times \dfrac{x^2-1}{3-x}$

Question 3: (6 points)

Solve the following equations:

1. $|2x-3| = |3x+1|$

2. $x^2 - 2x + 3 = 0$

Question 4: (6 points)

Solve the following inequalities:

1. $\dfrac{3}{2}x - 1 \le x + \dfrac{1}{3}$

2. $5|3x - 1| - 7 \ge 8$

Question 5: (4 points)

Solve the system $\begin{cases} x - y - 2z = 1 \\ x - 5y + 2z = 5 \\ 2x - 3y - 4z = 2 \end{cases}$